



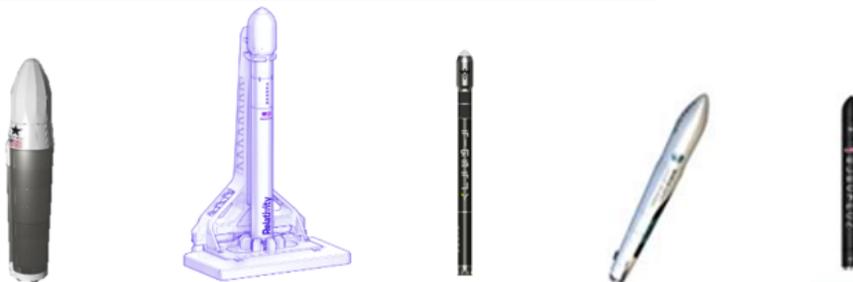
What is Venture Class?

- Venture Class embraces a commercial approach that provides NASA a new class of launch
- The Venture Class of launch services enables and provides unique launch capabilities and opportunities for Class D or higher risk tolerant payloads (NPR 8705.4) at a lower price than NLS launch services
- Venture Class developed, and now implements, a modified technical oversight approach (NPD 8610.23) to use a lower level of mission assurance and more commercial practices to achieve lower launch costs through FAA licensed launches
- In the Venture Class, LSP uses its organizational flexibility with an evolved management approach to execute right sized practices and processes
- In the Venture Class, requirements can be tailored to customer needs:
 - NASA launch Category 1 vehicle certification (NPD 8610.7D) is not required but can be included in the Task Order requirements
 - Enables NASA to be first launch of a new vehicle, but can require a successful launch of the vehicle before NASA’s launch (e.g. higher value Class D missions such as SMEX and EVM)
 - Mission Integration products and processes are adaptable depending on mission complexity

Contracting History and Future

- The 2015 Venture Class Launch Services (VCLS) demonstration contracts studied the risks of selecting new, small Launch Vehicles (LVs) before they had flown and determined that these new LVs could deliver NASA payloads at a fixed price
- One-off, stand alone contracts such as the CAPSTONE and TROPICS contracts were awarded as the market developed to service customers
- Demonstration contracts like VCLS Demo 2 will continue to understand the new US launch suppliers using CSLI payloads
- In the future, the VADR Launch Services (Venture-Class Acquisition of Dedicated and Rideshare Launch Services), a 5-year IDIQ contract, will create structure for a broader array of NASA customers

Examples of Venture Class Vehicles



Specification	Astra Space (Rocket 3 Series)	Relativity Space (Terran 1)	Firefly Black (Alpha)	Virgin Orbit (LauncherOne)	Rocket Lab USA (Electron)
Length	11.6 m	35.2 m	29 m	20 m	17 m
Payload Mass	25–50 kg	900 kg	630 kg	300 kg	150 kg
Orbit	500 km	500 km	500 km	500 km	500 km
LV Certification	No Certification High risk-tolerant spacecraft				Cat 1 Certified



NASA LSP Fact Sheet for Venture Class Future Contracting

May 2021



John F. Kennedy Space Center

VADR Launch Services

Venture-Class Acquisition of Dedicated and Rideshare (VADR) Launch Services

- **Contract Summary:** The principal purpose of the VADR IDIQ contract is to provide FAA licensed launch services capable of delivering payloads to a variety of orbits, including escape trajectories. Accommodates very low complexity CubeSats up to more complex Class D missions (e.g. EVM and SMEX)
- **Anticipated Award:** 2021, with 5-year ordering period

Summarizing the differences between NLS II, VADR, VCLS contracts:

<u>NLS II</u>	<u>VADR</u>	<u>VCLS</u>
NASA managed launch services for high priority, low risk tolerant missions.	Implements the modified technical oversight approach in NPD 8610.23 and is only available to Class D and higher risk tolerant missions (not applicable for Class A-D+) to use a lower level of mission assurance and more commercial practices to achieve lower launch costs through FAA licensed launches.	Contracts to develop new emerging vehicles prior to having a first flight. These include the VCLS and VCLS Demo 2 contracts.
Full application of NPD 8610.23, resulting in the highest practical probability of launch success.		Precursor to VADR.
Commercial PPF procured separately.		
Please see the NLS II Fact Sheet for more information.	PPF is included as part of the launch service.	

For VADR, while we're not doing full LSP mission assurance we are:

- Assessing the schedule risk
- Commercial interim payments to protect our investments
- Protection from commercial industry standard terms and conditions
- Structured mini version of the successful LSP mission integration process
- Launch delay clause
- Intended to align with commercial practices while still protecting the interest of our customer
- Doing all this at limited, if any, increase to commercial price. Comparing the contracts we have awarded to internet prices, the prices are in line or better than commercially advertised prices



NASA LSP Fact Sheet for Venture Class

One-Off Venture Class Missions and Contracts



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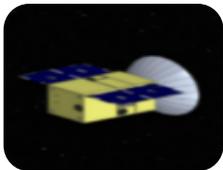
Contract: VCLS (Venture Class Launch Services)

- **Summary:** The first VCLS contracts were fixed price contracts for demonstration launches
- **Awarded:** September 2015 to Firefly Space Systems (\$5.5M), Rocket Lab USA (\$6.9M), Virgin Orbit (\$4.7M)
- **Launch Vehicles:** Firefly Space Systems (Alpha), Virgin Orbit (LauncherOne) and Rocket Lab USA (Electron)
- **Mission:** ELaNa 19, ELaNa 20
- **Launched:** Virgin Orbit (1/17/2021), Rocket Lab USA (12/16/2018), Firefly Space Systems (Contract Terminated)



Mission/Contract: CAPSTONE (Cislunar Autonomous Positioning System Technology Operations and Navigation Experiment)

- **Summary:** The launch service for the CAPSTONE mission will launch a 12U Class satellite to a Trans Lunar Injection orbit
- **Awarded:** February 2020 to Rocket Lab USA (\$9.95M)
- **Launch Vehicle:** Electron
- **Planned Launch Date:** Fall 2021



Contract: Integration and Launch of Spacecraft

- **Summary:** Integration and Launch of a 3U CubeSat
- **Awarded:** July 2020 to Momentus (\$112K)
- **Launch Vehicle:** Falcon 9 - SpaceX Rideshare Program
- **Mission:** TBD
- **Planned Launch Date:** Summer 2023



Contract: VCLS Demo 2 (Venture Class Launch Services Demonstration 2)

- **Summary:** The VCLS Demo 2 contracts are fixed price contracts for demonstration launches
- **Awarded:** December 2020 to Astra Space (\$3.9M), Relativity Space (\$3.0M), Firefly Black (\$9.8M)
- **Mission:** ELaNa 41, ELaNa 42, ELaNa 43
- **Launch Vehicles:** Astra Space (Rocket 3), Relativity Space (Terran 1), and Firefly Black (Alpha)
- **Planned Launch Date:** December 2021 (Astra Space), April 2022 (Relativity Space), June 2022 (Firefly Black)



Mission/Contract: LLITED (Low-Latitude Ionosphere/Thermosphere Enhancements in Density)

- **Summary:** The Integration and Launch of LLITED provided a low, cost launch service solution for the LLITED payload
- **Awarded:** March 2021 to Spaceflight (\$100K)
- **Launch Vehicle:** Falcon 9 - SpaceX Rideshare Program
- **Planned Launch Date:** Spring 2022



Mission/Contract: TROPICS

- **Summary:** The launch service for the TROPICS mission will launch six CubeSats that will be placed in three different operational orbits within 120 days
- **Awarded:** February 2021 to Astra Space (\$7.95M)
- **Launch Vehicle:** Rocket 3
- **Planned Launch Dates:** March 2022, April 2022, May 2022

